SEQUENCE LISTING

<110> Dale, James Langham
Echeverria, Santy Peraza

<120> BANANA RESISTANCE GENES AND USES THEREOF

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<141> 2006-10-31

<150> PCT/AU2004/001300
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Gln Thr Leu Leu Asp Lys Ala Ser Asn Cys Ala Ile Gln Gln Leu Ala
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cgg cgc cgc ggc ctt cac gat gac ctg agg cgg ctg cgg acg tct ctg 144
Arg Arg Arg Gly Leu His Asp Asp Leu Arg Arg Leu Arg Thr Ser Leu
35 40 45

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Leu Arg Ile His Ala Ile Leu Asp Lys Ala Glu Thr Arg Trp Asn His
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Lys Asn Thr Ser Leu Val Glu Leu Val Arg Gln Leu Lys Asp Ala Ala
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tat gac gcc gag gac tta ctg gag gag ttg gag tac caa gcc gcg aag 288
Tyr Asp Ala Glu Asp Leu Leu Glu Glu Leu Glu Tyr Gln Ala Ala Lys
85 90 95

caa aag gtc gag cac cgg gga gac cag ata agc gac ctc ttt tct ttt 336
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tcc ctt agt act gcg agc gag tgg ttg ggt gcc gat ggt gat gat gct      384
Ser Leu Ser Thr Ala Ser Glu Trp Leu Gly Ala Asp Gly Asp Asp Ala
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ggg act cga ttg agg gag atc cag ggg aag ctg tgc aac att gct gcc      432
Gly Thr Arg Leu Arg Glu Ile Gln Gly Lys Leu Cys Asn Ile Ala Ala
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gat atg atg gat gtc atg cag cta ttg gca ccc gat gat ggg ggg aga      480
Asp Met Met Asp Val Met Gln Leu Leu Ala Pro Asp Asp Gly Gly Arg
145                 150                 155                 160

caa ttc gac tgg aag gtg gtg aga aga gaa acg agc tct ttc ttg acc      528
Gln Phe Asp Trp Lys Val Val Arg Arg Glu Thr Ser Ser Phe Leu Thr
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gaa acc gtc gtg ttt ggt cgg gac caa gaa agg gag aaa gta gta gaa      576
Glu Thr Val Val Phe Gly Arg Asp Gln Glu Arg Glu Lys Val Val Glu
            180                 185                 190

ttg ctg ttg gat tca gga tct ggt aac agt agc ttc tct gtc tta ccc      624
Leu Leu Leu Asp Ser Gly Ser Gly Asn Ser Ser Phe Ser Val Leu Pro
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ctc gtc gga atc gga ggg gtt ggg aag acg act ctg gct cag ctc gtg      672
Leu Val Gly Ile Gly Gly Val Gly Lys Thr Thr Leu Ala Gln Leu Val
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Tyr Asn Asp Asn Arg Val Gly Asn Tyr Phe His Leu Lys Val Trp Val
225                 230                 235                 240

tgt gta tcc gac aat ttc aat gtg aag aga ctg acc aaa gag ata atc      768
Cys Val Ser Asp Asn Phe Asn Val Lys Arg Leu Thr Lys Glu Ile Ile
                245                 250                 255

gag tct gct acc aag gtg gaa caa tct gac aaa ttg aac ttg gac acc      816
Glu Ser Ala Thr Lys Val Glu Gln Ser Asp Lys Leu Asn Leu Asp Thr
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ctg caa cag atc ctc aag gag aag att gct tca gag agg ttt ctg cta      864
Leu Gln Gln Ile Leu Lys Glu Lys Ile Ala Ser Glu Arg Phe Leu Leu
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gtc ctc gat gat gtg tgg agc gaa aac agg gat gac tgg gaa agg ctg      912
Val Leu Asp Asp Val Trp Ser Glu Asn Arg Asp Asp Trp Glu Arg Leu
    290                 295                 300

tgc gca cca cta agg ttt gca gca aga ggc agc aag gtt ata gtc aca      960
Cys Ala Pro Leu Arg Phe Ala Ala Arg Gly Ser Lys Val Ile Val Thr
305                 310                 315                 320

act cga gac aca aag att gcc agc atc att ggc aca atg aag gaa att     1008
Thr Arg Asp Thr Lys Ile Ala Ser Ile Ile Gly Thr Met Lys Glu Ile
                325                 330                 335

tcg ctc gat ggt ctc cag gat gat gct tac tgg gag ctg ttc aag aaa     1056
Ser Leu Asp Gly Leu Gln Asp Asp Ala Tyr Trp Glu Leu Phe Lys Lys
            340                 345                 350

tgt gca ttt ggt tct gtg aac ccc cag gag cat cta gag ctc gag gtt     1104
Cys Ala Phe Gly Ser Val Asn Pro Gln Glu His Leu Glu Leu Glu Val
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atc ggt aga aag att gct ggt aag ttg aag ggc tca ccg cta gca gca     1152
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aaa aca cta gga agc ttg ttg cgg ttg gat gtc agc caa gaa cac tgg     1200
Lys Thr Leu Gly Ser Leu Leu Arg Leu Asp Val Ser Gln Glu His Trp
385                 390                 395                 400

aga act ata atg gaa agt gag gta tgg caa ctg cca caa gct gaa aat     1248
Arg Thr Ile Met Glu Ser Glu Val Trp Gln Leu Pro Gln Ala Glu Asn
                405                 410                 415

gaa ata ttg cct gtt cta tgg ctg agc tat caa cac ctt ccc gga cat     1296
Glu Ile Leu Pro Val Leu Trp Leu Ser Tyr Gln His Leu Pro Gly His
            420                 425                 430

ctt aga cag tgt ttc gct ttt tgc gct gtg ttt cac aaa gat tat tta     1344
Leu Arg Gln Cys Phe Ala Phe Cys Ala Val Phe His Lys Asp Tyr Leu
        435                 440                 445

ttc tat aaa cat gag ttg atc cag act tgg att gca gaa ggc ttc att     1392
Phe Tyr Lys His Glu Leu Ile Gln Thr Trp Ile Ala Glu Gly Phe Ile
    450                 455                 460

gca cat caa gga aac aag agg atg gaa gat gtc gga agc agc tac ttc     1440
Ala His Gln Gly Asn Lys Arg Met Glu Asp Val Gly Ser Ser Tyr Phe
465                 470                 475                 480

cat gag ctt gtt aat agg tct ttc ttt cag gaa tct cgg tgg aga ggg     1488
His Glu Leu Val Asn Arg Ser Phe Phe Gln Glu Ser Arg Trp Arg Gly
                485                 490                 495

cga tat gtg atg cat gac ctc ata cac gat ctt gcc caa ttt ata tca     1536
Arg Tyr Val Met His Asp Leu Ile His Asp Leu Ala Gln Phe Ile Ser
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gtg gga gag tgt cat agg ata gat gat gac aag tcc aaa gag acc cct     1584
Val Gly Glu Cys His Arg Ile Asp Asp Asp Lys Ser Lys Glu Thr Pro
        515                 520                 525

agt acg act cgt cat cta tca gta gca tta act gag caa atg aag ttg     1632
Ser Thr Thr Arg His Leu Ser Val Ala Leu Thr Glu Gln Met Lys Leu
    530                 535                 540

gtg gat ttt tca ggt tac aat aaa ttg cgg acc ctt atg atc aac aat     1680
Val Asp Phe Ser Gly Tyr Asn Lys Leu Arg Thr Leu Met Ile Asn Asn
545                 550                 555                 560

cag aga aat cag tat cca tat atg act aaa gtc aac agc tgc ttg ttg     1728
Gln Arg Asn Gln Tyr Pro Tyr Met Thr Lys Val Asn Ser Cys Leu Leu
                565                 570                 575

cct cat agc ttg ttc aaa aga ctg aaa aga atc cat gtt tta gtt ttg     1776
Pro His Ser Leu Phe Lys Arg Leu Lys Arg Ile His Val Leu Val Leu
            580                 585                 590

cag aag tgt ggc atg aaa gag ttg cct gat att atc ggt gac ttg ata     1824
Gln Lys Cys Gly Met Lys Glu Leu Pro Asp Ile Ile Gly Asp Leu Ile
        595                 600                 605

caa ctt cgg tac ctt gac ata tcc tac aat gct tgc att cag agg ttg     1872
Gln Leu Arg Tyr Leu Asp Ile Ser Tyr Asn Ala Cys Ile Gln Arg Leu
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    610                 615                 620

ccc gag tca ttg tgc gac ctt tac aat ctg caa gca ctg agg cta tgg     1920
Pro Glu Ser Leu Cys Asp Leu Tyr Asn Leu Gln Ala Leu Arg Leu Trp
625                 630                 635                 640

ggc tgt caa tta cgg agt ttc cca caa ggc atg agc aag ctg atc aac     1968
Gly Cys Gln Leu Arg Ser Phe Pro Gln Gly Met Ser Lys Leu Ile Asn
                645                 650                 655

ttg agg caa ctt cgt gta gaa gat gag ata att tcc aag ata tat gag     2016
Leu Arg Gln Leu Arg Val Glu Asp Glu Ile Ile Ser Lys Ile Tyr Glu
            660                 665                 670

gtt ggg aag ctg att tct ctg caa gaa ttg tct gca ttc aaa gtg cta     2064
Val Gly Lys Leu Ile Ser Leu Gln Glu Leu Ser Ala Phe Lys Val Leu
        675                 680                 685

aat aat cat gga aac aaa ctt gca gaa cta agt ggt ttg aca caa ctc     2112
Asn Asn His Gly Asn Lys Leu Ala Glu Leu Ser Gly Leu Thr Gln Leu
    690                 695                 700

cgc agc act cta cga att aca aat ctt gaa aat gta ggg agt aaa gaa     2160
Arg Ser Thr Leu Arg Ile Thr Asn Leu Glu Asn Val Gly Ser Lys Glu
705                 710                 715                 720

gaa gca agc aag gct aaa ctg cac agg aaa cag tat ctt gaa gca tta     2208
Glu Ala Ser Lys Ala Lys Leu His Arg Lys Gln Tyr Leu Glu Ala Leu
                725                 730                 735

gag tta gag tgg gca gct ggc cag gtt tcc agc ttg gag cat gag tta     2256
Glu Leu Glu Trp Ala Ala Gly Gln Val Ser Ser Leu Glu His Glu Leu
            740                 745                 750

ctt gtc tcg gag gaa gta ctt tta ggt ctc caa cca cat cac ttc ctc     2304
Leu Val Ser Glu Glu Val Leu Leu Gly Leu Gln Pro His His Phe Leu
        755                 760                 765

aaa agt ttg aca atc aga ggg tac agt ggt gca aca gta ccc agt tgg     2352
Lys Ser Leu Thr Ile Arg Gly Tyr Ser Gly Ala Thr Val Pro Ser Trp
    770                 775                 780

ctg gat gtg aaa atg cta ccg aac ttg gga act ctt aaa cta gag aac     2400
Leu Asp Val Lys Met Leu Pro Asn Leu Gly Thr Leu Lys Leu Glu Asn
785                 790                 795                 800

tgt aca aga ctg gag ggt ctt tca tat att gga caa ctg cca cat ctc     2448
Cys Thr Arg Leu Glu Gly Leu Ser Tyr Ile Gly Gln Leu Pro His Leu
                805                 810                 815

aag gtc ctt cat atg aag aga atg cct gtg gtg aaa caa atg agt cat     2496
Lys Val Leu His Met Lys Arg Met Pro Val Val Lys Gln Met Ser His
            820                 825                 830

gaa tta tgt ggc tgt acg aaa agc aag ttg ttc cct agg cta gaa gag     2544
Glu Leu Cys Gly Cys Thr Lys Ser Lys Leu Phe Pro Arg Leu Glu Glu
        835                 840                 845

tta gta ctg gag gat atg cca aca ttg aaa gaa ttc ccg aat ctt gca     2592
Leu Val Leu Glu Asp Met Pro Thr Leu Lys Glu Phe Pro Asn Leu Ala
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caa ctt cct tgt ctc aag att att cac atg aag aac atg ttt gca gta     2640
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Gln Leu Pro Cys Leu Lys Ile Ile His Met Lys Asn Met Phe Ala Val
865                 870                 875                 880

aaa cat ata ggt cgt gaa tta tat ggt gat ata gag agc aat tgt ttt     2688
Lys His Ile Gly Arg Glu Leu Tyr Gly Asp Ile Glu Ser Asn Cys Phe
                885                 890                 895

cta tca tta gaa gag ctt gtg ctg cag gac atg ctg aca ttg gag gaa     2736
Leu Ser Leu Glu Glu Leu Val Leu Gln Asp Met Leu Thr Leu Glu Glu
            900                 905                 910

ctc cca aat ctt gga caa ctt cca cat ctt aag gtt att cac atg aag     2784
Leu Pro Asn Leu Gly Gln Leu Pro His Leu Lys Val Ile His Met Lys
        915                 920                 925

aac atg tct gca ctg aaa ctt ata ggt cgt gaa tta tgt gat tct aga     2832
Asn Met Ser Ala Leu Lys Leu Ile Gly Arg Glu Leu Cys Asp Ser Arg
    930                 935                 940

gag aaa att tgg ttt cct agg cta gaa gtg cta gtg ctg aag aac atg     2880
Glu Lys Ile Trp Phe Pro Arg Leu Glu Val Leu Val Leu Lys Asn Met
945                 950                 955                 960

ctg gca ctg gag gaa ctc cca agc ttg gac aac ttc cgt gtc tca aga     2928
Leu Ala Leu Glu Glu Leu Pro Ser Leu Asp Asn Phe Arg Val Ser Arg
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ttc ttc gca tcc agt gtc gaa gta ggc cat gga ctc ttt agt gct acg     2976
Phe Phe Ala Ser Ser Val Glu Val Gly His Gly Leu Phe Ser Ala Thr
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agg aat aaa tgg ttt cca agg ctg  gaa gag cta gaa atc  aag ggc atg   3024
Arg Asn Lys Trp Phe Pro Arg Leu  Glu Glu Leu Glu Ile  Lys Gly Met
        995                 1000                1005

ctg aca  ttt gag gaa ctc cat  tct ctt gaa aaa ctg  cca tgt ctc      3069
Leu Thr  Phe Glu Glu Leu His  Ser Leu Glu Lys Leu  Pro Cys Leu
    1010                1015                1020

aag gtt  ttc cgc atc aag gga  ttg cca gca gtg aaa  aag ata ggc      3114
Lys Val  Phe Arg Ile Lys Gly  Leu Pro Ala Val Lys  Lys Ile Gly
    1025                1030                1035

cat gga  tta ttt gat tct acc  tgt cag aga gag tgt  ttt cca agg      3159
His Gly  Leu Phe Asp Ser Thr  Cys Gln Arg Glu Cys  Phe Pro Arg
    1040                1045                1050

ttg gaa  gat ctc gta tta agc  gac atg cca gca tgg  gaa gag tgg      3204
Leu Glu  Asp Leu Val Leu Ser  Asp Met Pro Ala Trp  Glu Glu Trp
    1055                1060                1065

tcg tgg  gct gaa agg gag gag  tta ttt tcc tgc ttg  tgt aga ctt      3249
Ser Trp  Ala Glu Arg Glu Glu  Leu Phe Ser Cys Leu  Cys Arg Leu
    1070                1075                1080

aaa att  gaa caa tgc ccc aaa  ctt aaa tgc ttg ctt  ccc atc cct      3294
Lys Ile  Glu Gln Cys Pro Lys  Leu Lys Cys Leu Leu  Pro Ile Pro
    1085                1090                1095

cat tct  ctc ata aaa ctt gaa  tta tgg caa gtt ggg  ctg aca gga      3339
His Ser  Leu Ile Lys Leu Glu  Leu Trp Gln Val Gly  Leu Thr Gly
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ctt cca  gga tta tgc aaa gga  att ggt gga ggt agc  agc act aga      3384
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act gct  tct ctc tca ctc ttg  cac att att aaa tgt  cca aat ctg      3429
Thr Ala  Ser Leu Ser Leu Leu  His Ile Ile Lys Cys  Pro Asn Leu
    1130                1135                1140

aga aat  ctg gga gaa ggg ttg  cta tca aac cac ctg  cca cat atc      3474
Arg Asn  Leu Gly Glu Gly Leu  Leu Ser Asn His Leu  Pro His Ile
    1145                1150                1155

aat gct  att cgg ata tgg gaa  tgt gct gaa ctg ttg  tgg ctg cct      3519
Asn Ala  Ile Arg Ile Trp Glu  Cys Ala Glu Leu Leu  Trp Leu Pro
    1160                1165                1170

gtc aag  agg ttt aga gaa ttc  acc acc ctt gag aac  ttg tca ata      3564
Val Lys  Arg Phe Arg Glu Phe  Thr Thr Leu Glu Asn  Leu Ser Ile
    1175                1180                1185

agg aac  tgc ccc aag ctc atg  agc atg aca cag tgt  gag gag aat      3609
Arg Asn  Cys Pro Lys Leu Met  Ser Met Thr Gln Cys  Glu Glu Asn
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gac ctc  ctc ctc ccg ccg tta  atc aag gca cta gaa  ttg ggt gac      3654
Asp Leu  Leu Leu Pro Pro Leu  Ile Lys Ala Leu Glu  Leu Gly Asp
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tgt gga  aat ctt ggg aaa tcg  ctg cct gga tgc cta  cac aac ctc      3699
Cys Gly  Asn Leu Gly Lys Ser  Leu Pro Gly Cys Leu  His Asn Leu
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agc tca  ctt act cag ttg gcg  ata tcc aat tgt cca  tac atg gta      3744
Ser Ser  Leu Thr Gln Leu Ala  Ile Ser Asn Cys Pro  Tyr Met Val
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tcc ctt  cca agg gaa gta atg  ctt cac ttg aag gaa  ctt gga act      3789
Ser Leu  Pro Arg Glu Val Met  Leu His Leu Lys Glu  Leu Gly Thr
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gta agg  atc gag aat tgt gat  ggg ctg gga tca ata  gag ggt tta      3834
Val Arg  Ile Glu Asn Cys Asp  Gly Leu Gly Ser Ile  Glu Gly Leu
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caa gtt  ctc aaa tca ctc aag  aga ttg gca atc ata  gga tgt ccc      3879
Gln Val  Leu Lys Ser Leu Lys  Arg Leu Ala Ile Ile  Gly Cys Pro
    1280                1285                1290

agg ctt  ttg cta aat gaa ggg  gat gag caa ggg gag  gtc ttg tca      3924
Arg Leu  Leu Leu Asn Glu Gly  Asp Glu Gln Gly Glu  Val Leu Ser
    1295                1300                1305

ctg ctt  gaa tta tca gta gat  aaa aca gcc cta ctt  aaa ctc tca      3969
Leu Leu  Glu Leu Ser Val Asp  Lys Thr Ala Leu Leu  Lys Leu Ser
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ctt ata  aaa aat aca cta cca  ttc atc cat tct ctc  aga atc atc      4014
Leu Ile  Lys Asn Thr Leu Pro  Phe Ile His Ser Leu  Arg Ile Ile
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tgg tct  cct cag aaa gtg atg  ttt gac ttg gag gag  cag gaa ttg      4059
Trp Ser  Pro Gln Lys Val Met  Phe Asp Leu Glu Glu  Gln Glu Leu
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aag aat  ctc cag tcc ttg cca  aca gag ttg cat acc  ctt cct tcc      4149
Lys Asn  Leu Gln Ser Leu Pro  Thr Glu Leu His Thr  Leu Pro Ser
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ctc cat  gct ttg gtt gta agt  gac tgc cca cag atc  caa tca ctg      4194
Leu His  Ala Leu Val Val Ser  Asp Cys Pro Gln Ile  Gln Ser Leu
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ccg gag  aag gga ctc ccg aca  ctc ctc aca gat tta  gga ttt gac      4239
Pro Glu  Lys Gly Leu Pro Thr  Leu Leu Thr Asp Leu  Gly Phe Asp
    1400                 1405                 1410

cat tgc  cac cca gtg ctg act  gcg caa ctg gaa aag  cac ctg gca      4284
His Cys  His Pro Val Leu Thr  Ala Gln Leu Glu Lys  His Leu Ala
    1415                 1420                 1425

gag atg  aag agc tca ggt cga  ttt cac cca gtt tat  gca taggcaacat   4333
Glu Met  Lys Ser Ser Gly Arg  Phe His Pro Val Tyr  Ala
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Arg Arg Arg Gly Leu His Asp Asp Leu Arg Arg Leu Arg Thr Ser Leu
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    50                  55                  60
Lys Asn Thr Ser Leu Val Glu Leu Val Arg Gln Leu Lys Asp Ala Ala
65                  70                  75                  80
Tyr Asp Ala Glu Asp Leu Leu Glu Glu Leu Glu Tyr Gln Ala Ala Lys
                85                  90                  95
Gln Lys Val Glu His Arg Gly Asp Gln Ile Ser Asp Leu Phe Ser Phe
            100                 105                 110
Ser Leu Ser Thr Ala Ser Glu Trp Leu Gly Ala Asp Gly Asp Asp Ala
        115                 120                 125
Gly Thr Arg Leu Arg Glu Ile Gln Gly Lys Leu Cys Asn Ile Ala Ala
    130                 135                 140
Asp Met Met Asp Val Met Gln Leu Leu Ala Pro Asp Asp Gly Gly Arg
145                 150                 155                 160
Gln Phe Asp Trp Lys Val Val Arg Arg Glu Thr Ser Ser Phe Leu Thr
                165                 170                 175
Glu Thr Val Val Phe Gly Arg Asp Gln Glu Arg Glu Lys Val Val Glu
            180                 185                 190
Leu Leu Leu Asp Ser Gly Ser Gly Asn Ser Ser Phe Ser Val Leu Pro
        195                 200                 205
Leu Val Gly Ile Gly Gly Val Gly Lys Thr Thr Leu Ala Gln Leu Val
    210                 215                 220
Tyr Asn Asp Asn Arg Val Gly Asn Tyr Phe His Leu Lys Val Trp Val
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225                 230                 235                 240
Cys Val Ser Asp Asn Phe Asn Val Lys Arg Leu Thr Lys Glu Ile Ile
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Glu Ser Ala Thr Lys Val Glu Gln Ser Asp Lys Leu Asn Leu Asp Thr
            260                 265                 270
Leu Gln Gln Ile Leu Lys Glu Lys Ile Ala Ser Glu Arg Phe Leu Leu
        275                 280                 285
Val Leu Asp Asp Val Trp Ser Glu Asn Arg Asp Asp Trp Glu Arg Leu
    290                 295                 300
Cys Ala Pro Leu Arg Phe Ala Ala Arg Gly Ser Lys Val Ile Val Thr
305                 310                 315                 320
Thr Arg Asp Thr Lys Ile Ala Ser Ile Ile Gly Thr Met Lys Glu Ile
                325                 330                 335
Ser Leu Asp Gly Leu Gln Asp Asp Ala Tyr Trp Glu Leu Phe Lys Lys
            340                 345                 350
Cys Ala Phe Gly Ser Val Asn Pro Gln Glu His Leu Glu Leu Glu Val
        355                 360                 365
Ile Gly Arg Lys Ile Ala Gly Lys Leu Lys Gly Ser Pro Leu Ala Ala
    370                 375                 380
Lys Thr Leu Gly Ser Leu Leu Arg Leu Asp Val Ser Gln Glu His Trp
385                 390                 395                 400
Arg Thr Ile Met Glu Ser Glu Val Trp Gln Leu Pro Gln Ala Glu Asn
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Glu Ile Leu Pro Val Leu Trp Leu Ser Tyr Gln His Leu Pro Gly His
            420                 425                 430
Leu Arg Gln Cys Phe Ala Phe Cys Ala Val Phe His Lys Asp Tyr Leu
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Phe Tyr Lys His Glu Leu Ile Gln Thr Trp Ile Ala Glu Gly Phe Ile
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Ala His Gln Gly Asn Lys Arg Met Glu Asp Val Gly Ser Ser Tyr Phe
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His Glu Leu Val Asn Arg Ser Phe Phe Gln Glu Ser Arg Trp Arg Gly
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Arg Tyr Val Met His Asp Leu Ile His Asp Leu Ala Gln Phe Ile Ser
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Val Gly Glu Cys His Arg Ile Asp Asp Asp Lys Ser Lys Glu Thr Pro
        515                 520                 525
Ser Thr Thr Arg His Leu Ser Val Ala Leu Thr Glu Gln Met Lys Leu
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Val Asp Phe Ser Gly Tyr Asn Lys Leu Arg Thr Leu Met Ile Asn Asn
545                 550                 555                 560
Gln Arg Asn Gln Tyr Pro Tyr Met Thr Lys Val Asn Ser Cys Leu Leu
                565                 570                 575
Pro His Ser Leu Phe Lys Arg Leu Lys Arg Ile His Val Leu Val Leu
            580                 585                 590
Gln Lys Cys Gly Met Lys Glu Leu Pro Asp Ile Ile Gly Asp Leu Ile
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Gln Leu Arg Tyr Leu Asp Ile Ser Tyr Asn Ala Cys Ile Gln Arg Leu
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Pro Glu Ser Leu Cys Asp Leu Tyr Asn Leu Gln Ala Leu Arg Leu Trp
625                 630                 635                 640
Gly Cys Gln Leu Arg Ser Phe Pro Gln Gly Met Ser Lys Leu Ile Asn
                645                 650                 655
Leu Arg Gln Leu Arg Val Glu Asp Glu Ile Ile Ser Lys Ile Tyr Glu
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Val Gly Lys Leu Ile Ser Leu Gln Glu Leu Ser Ala Phe Lys Val Leu
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Asn Asn His Gly Asn Lys Leu Ala Glu Leu Ser Gly Leu Thr Gln Leu
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Arg Ser Thr Leu Arg Ile Thr Asn Leu Glu Asn Val Gly Ser Lys Glu
705                 710                 715                 720
Glu Ala Ser Lys Ala Lys Leu His Arg Lys Gln Tyr Leu Glu Ala Leu
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Glu Leu Glu Trp Ala Ala Gly Gln Val Ser Ser Leu Glu His Glu Leu
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Leu Val Ser Glu Glu Val Leu Leu Gly Leu Gln Pro His His Phe Leu
        755                 760                 765
Lys Ser Leu Thr Ile Arg Gly Tyr Ser Gly Ala Thr Val Pro Ser Trp
    770                 775                 780
Leu Asp Val Lys Met Leu Pro Asn Leu Gly Thr Leu Lys Leu Glu Asn
785                 790                 795                 800
Cys Thr Arg Leu Glu Gly Leu Ser Tyr Ile Gly Gln Leu Pro His Leu
                805                 810                 815
Lys Val Leu His Met Lys Arg Met Pro Val Val Lys Gln Met Ser His
            820                 825                 830
Glu Leu Cys Gly Cys Thr Lys Ser Lys Leu Phe Pro Arg Leu Glu Glu
        835                 840                 845
Leu Val Leu Glu Asp Met Pro Thr Leu Lys Glu Phe Pro Asn Leu Ala
    850                 855                 860
Gln Leu Pro Cys Leu Lys Ile Ile His Met Lys Asn Met Phe Ala Val
865                 870                 875                 880
Lys His Ile Gly Arg Glu Leu Tyr Gly Asp Ile Glu Ser Asn Cys Phe
                885                 890                 895
Leu Ser Leu Glu Glu Leu Val Leu Gln Asp Met Leu Thr Leu Glu Glu
            900                 905                 910
Leu Pro Asn Leu Gly Gln Leu Pro His Leu Lys Val Ile His Met Lys
        915                 920                 925
Asn Met Ser Ala Leu Lys Leu Ile Gly Arg Glu Leu Cys Asp Ser Arg
    930                 935                 940
Glu Lys Ile Trp Phe Pro Arg Leu Glu Val Leu Val Leu Lys Asn Met
945                 950                 955                 960
Leu Ala Leu Glu Glu Leu Pro Ser Leu Asp Asn Phe Arg Val Ser Arg
                965                 970                 975
Phe Phe Ala Ser Ser Val Glu Val Gly His Gly Leu Phe Ser Ala Thr
            980                 985                 990
Arg Asn Lys Trp Phe Pro Arg Leu Glu Glu Leu Glu Ile Lys Gly Met
        995                 1000                1005
Leu Thr Phe Glu Glu Leu His Ser Leu Glu Lys Leu Pro Cys Leu Lys
    1010                1015                1020
Val Phe Arg Ile Lys Gly Leu Pro Ala Val Lys Lys Ile Gly His Gly
1025                1030                1035                1040
Leu Phe Asp Ser Thr Cys Gln Arg Glu Cys Phe Pro Arg Leu Glu Asp
                1045                1050                1055
Leu Val Leu Ser Asp Met Pro Ala Trp Glu Glu Trp Ser Trp Ala Glu
            1060                1065                1070
Arg Glu Glu Leu Phe Ser Cys Leu Cys Arg Leu Lys Ile Glu Gln Cys
        1075                1080                1085
Pro Lys Leu Lys Cys Leu Leu Pro Ile Pro His Ser Leu Ile Lys Leu
    1090                1095                1100
Glu Leu Trp Gln Val Gly Leu Thr Gly Leu Pro Gly Leu Cys Lys Gly
1105                1110                1115                1120
Ile Gly Gly Gly Ser Ser Thr Arg Thr Ala Ser Leu Ser Leu Leu His
                1125                1130                1135
Ile Ile Lys Cys Pro Asn Leu Arg Asn Leu Gly Glu Gly Leu Leu Ser
            1140                1145                1150
Asn His Leu Pro His Ile Asn Ala Ile Arg Ile Trp Glu Cys Ala Glu
        1155                1160                1165
Leu Leu Trp Leu Pro Val Lys Arg Phe Arg Glu Phe Thr Thr Leu Glu
    1170                1175                1180
Asn Leu Ser Ile Arg Asn Cys Pro Lys Leu Met Ser Met Thr Gln Cys
1185                1190                1195                1200
Glu Glu Asn Asp Leu Leu Leu Pro Pro Leu Ile Lys Ala Leu Glu Leu
                1205                1210                1215
Gly Asp Cys Gly Asn Leu Gly Lys Ser Leu Pro Gly Cys Leu His Asn
            1220                1225                1230
Leu Ser Ser Leu Thr Gln Leu Ala Ile Ser Asn Cys Pro Tyr Met Val
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        1235                1240                1245
Ser Leu Pro Arg Glu Val Met Leu His Leu Lys Glu Leu Gly Thr Val
    1250                1255                1260
Arg Ile Glu Asn Cys Asp Gly Leu Gly Ser Ile Glu Gly Leu Gln Val
1265                1270                1275                1280
Leu Lys Ser Leu Lys Arg Leu Ala Ile Ile Gly Cys Pro Arg Leu Leu
                1285                1290                1295
Leu Asn Glu Gly Asp Glu Gln Gly Glu Val Leu Ser Leu Leu Glu Leu
            1300                1305                1310
Ser Val Asp Lys Thr Ala Leu Leu Lys Leu Ser Leu Ile Lys Asn Thr
        1315                1320                1325
Leu Pro Phe Ile His Ser Leu Arg Ile Ile Trp Ser Pro Gln Lys Val
    1330                1335                1340
Met Phe Asp Leu Glu Glu Gln Glu Leu Val His Ser Leu Thr Ala Leu
1345                1350                1355                1360
Arg Arg Leu Glu Phe Phe Arg Cys Lys Asn Leu Gln Ser Leu Pro Thr
                1365                1370                1375
Glu Leu His Thr Leu Pro Ser Leu His Ala Leu Val Val Ser Asp Cys
            1380                1385                1390
Pro Gln Ile Gln Ser Leu Pro Glu Lys Gly Leu Pro Thr Leu Leu Thr
        1395                1400                1405
Asp Leu Gly Phe Asp His Cys His Pro Val Leu Thr Ala Gln Leu Glu
    1410                1415                1420
Lys His Leu Ala Glu Met Lys Ser Ser Gly Arg Phe His Pro Val Tyr
1425                1430                1435                1440
Ala
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1               5                  10                  15

gaa atc ttt aac cgg tcc atc aat ttg atc gtc gcg gaa ctc cgg ttg       96
Glu Ile Phe Asn Arg Ser Ile Asn Leu Ile Val Ala Glu Leu Arg Leu
            20                  25                  30

cag ttg aat gcg aga gcc gag ctg aac aat ctg cag aga aca cta ttg      144
Gln Leu Asn Ala Arg Ala Glu Leu Asn Asn Leu Gln Arg Thr Leu Leu
        35                  40                  45

agg act cac tct ctg ctc gag gag gca aag gcg agg cgg atg act gac      192
Arg Thr His Ser Leu Leu Glu Glu Ala Lys Ala Arg Arg Met Thr Asp
    50                  55                  60

aag tct ctc gtg ctg tgg ctg atg gag ctc aag gaa tgg gcc tac gac      240
Lys Ser Leu Val Leu Trp Leu Met Glu Leu Lys Glu Trp Ala Tyr Asp
65                  70                  75                  80

gcc gac gac atc ctc gac gag tac gag gcc gca gca atc cga ctg aag      288
Ala Asp Asp Ile Leu Asp Glu Tyr Glu Ala Ala Ala Ile Arg Leu Lys
                85                  90                  95
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gta aca cgc tcg acc ttc aaa cgt ctt atc gat cat gtg att ata aat      336
Val Thr Arg Ser Thr Phe Lys Arg Leu Ile Asp His Val Ile Ile Asn
            100                 105                 110

gtt cca tta gcg cac aaa gta gca gac atc agg aaa agg ttg aac ggg      384
Val Pro Leu Ala His Lys Val Ala Asp Ile Arg Lys Arg Leu Asn Gly
        115                 120                 125

gtc act ctt gag agg gag cta aat ctg ggt gcg ctg gaa ggg tcg cag      432
Val Thr Leu Glu Arg Glu Leu Asn Leu Gly Ala Leu Glu Gly Ser Gln
    130                 135                 140

ccg ctt gat tcc acg aaa aga ggt gtg acc act tct ctt ctg act gaa      480
Pro Leu Asp Ser Thr Lys Arg Gly Val Thr Thr Ser Leu Leu Thr Glu
145                 150                 155                 160

tct tgt att gtc ggg cga gct caa gat aag gag aat ttg att cgg ttg      528
Ser Cys Ile Val Gly Arg Ala Gln Asp Lys Glu Asn Leu Ile Arg Leu
                165                 170                 175

ctg ttg gag ccc agc gat ggg gcg gtt cct gtt gtt cct ata gtt gga      576
Leu Leu Glu Pro Ser Asp Gly Ala Val Pro Val Val Pro Ile Val Gly
            180                 185                 190

tta gga ggg gca ggg aag acg act ctg tct cag ctt atc ttt aat gac      624
Leu Gly Gly Ala Gly Lys Thr Thr Leu Ser Gln Leu Ile Phe Asn Asp
        195                 200                 205

aag aga gtg gag gag cat ttc cca ttg aga atg tgg gtg tgt gtg tct      672
Lys Arg Val Glu Glu His Phe Pro Leu Arg Met Trp Val Cys Val Ser
    210                 215                 220

gac gat ttt gat gtg aag aga att act aga gag atc aca gag tac gcc      720
Asp Asp Phe Asp Val Lys Arg Ile Thr Arg Glu Ile Thr Glu Tyr Ala
225                 230                 235                 240

acc aac gga agg ttc atg gat ctc acc aac ttg aat atg ctt caa gtt      768
Thr Asn Gly Arg Phe Met Asp Leu Thr Asn Leu Asn Met Leu Gln Val
                245                 250                 255

aat ctg aaa gag gag ata agg ggg acg aca ttt ttg ctt gtg ctg gat      816
Asn Leu Lys Glu Glu Ile Arg Gly Thr Thr Phe Leu Leu Val Leu Asp
            260                 265                 270

gat gtg tgg aac gaa gac ccc gtg aag tgg gaa agc ctg tta gcc cca      864
Asp Val Trp Asn Glu Asp Pro Val Lys Trp Glu Ser Leu Leu Ala Pro
        275                 280                 285

tta gat gcc gga gga cgg gga agc gtg gtc att gtg acg aca cag agc      912
Leu Asp Ala Gly Gly Arg Gly Ser Val Val Ile Val Thr Thr Gln Ser
    290                 295                 300

aaa aag gtc gcc gat gtc acc ggc acg atg gag cca tac gtt ctc gag      960
Lys Lys Val Ala Asp Val Thr Gly Thr Met Glu Pro Tyr Val Leu Glu
305                 310                 315                 320

gag tta acg gag gat gac agt tgg tca ctc atc gag agt cac tcc ttc     1008
Glu Leu Thr Glu Asp Asp Ser Trp Ser Leu Ile Glu Ser His Ser Phe
                325                 330                 335

agg gag gcg agc tgc tct agt aca aat cct aga atg gaa gag atc ggg     1056
Arg Glu Ala Ser Cys Ser Ser Thr Asn Pro Arg Met Glu Glu Ile Gly
            340                 345                 350
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agg aag ata gcc aag aag atc agt ggc cta cct tac gga gca aca gca     1104
Arg Lys Ile Ala Lys Lys Ile Ser Gly Leu Pro Tyr Gly Ala Thr Ala
        355                 360                 365

atg ggg aga tat cta aga tct aag cac gga gaa agc agc tgg aga gaa     1152
Met Gly Arg Tyr Leu Arg Ser Lys His Gly Glu Ser Ser Trp Arg Glu
    370                 375                 380

gtc ttg gaa act gag act tgg gag atg cca ccg gct gca agt gat gtg     1200
Val Leu Glu Thr Glu Thr Trp Glu Met Pro Pro Ala Ala Ser Asp Val
385                 390                 395                 400

tta tcc gct cta agg aga agt tac gac aat cta ccc cct cag ctg aag     1248
Leu Ser Ala Leu Arg Arg Ser Tyr Asp Asn Leu Pro Pro Gln Leu Lys
                405                 410                 415

ctc tgt ttt gcc ttc tgt gct ctg ttt aca aag ggc tac agg ttt cga     1296
Leu Cys Phe Ala Phe Cys Ala Leu Phe Thr Lys Gly Tyr Arg Phe Arg
            420                 425                 430

aag gat aca ctg atc cac atg tgg ata gct caa aat ttg att caa tca     1344
Lys Asp Thr Leu Ile His Met Trp Ile Ala Gln Asn Leu Ile Gln Ser
        435                 440                 445

aca gag tcg aaa aga tcg gag gac atg gca gaa gaa tgc ttt gat gat     1392
Thr Glu Ser Lys Arg Ser Glu Asp Met Ala Glu Glu Cys Phe Asp Asp
    450                 455                 460

ttg gtg tgc aga ttc ttc ttt cgg tac tcc tgg ggc aac tat gtg atg     1440
Leu Val Cys Arg Phe Phe Phe Arg Tyr Ser Trp Gly Asn Tyr Val Met
465                 470                 475                 480

aat gac tca gtc cat gac ctc gct cga tgg gtt tca ttg gat gaa tat     1488
Asn Asp Ser Val His Asp Leu Ala Arg Trp Val Ser Leu Asp Glu Tyr
                485                 490                 495

ttt cga gca gat gaa gac tca cca ttg cat att tca aag cca att cgt     1536
Phe Arg Ala Asp Glu Asp Ser Pro Leu His Ile Ser Lys Pro Ile Arg
            500                 505                 510

cat ttg tca tgg tgc agt gaa aga ata acc aat gtt ctt gag gat aat     1584
His Leu Ser Trp Cys Ser Glu Arg Ile Thr Asn Val Leu Glu Asp Asn
        515                 520                 525

aac act ggt gga gat gct gtc aat ccg ctc agc agt ttg cgc act ctc     1632
Asn Thr Gly Gly Asp Ala Val Asn Pro Leu Ser Ser Leu Arg Thr Leu
    530                 535                 540

ctt ttc tta ggc caa tct gag ttc cgg tcg tat cat ctt ctt gat aga     1680
Leu Phe Leu Gly Gln Ser Glu Phe Arg Ser Tyr His Leu Leu Asp Arg
545                 550                 555                 560

atg ttc agg atg ttg agc cga atc cgt gtt ttg gat ttc agc aac tgc     1728
Met Phe Arg Met Leu Ser Arg Ile Arg Val Leu Asp Phe Ser Asn Cys
                565                 570                 575

gtc ata aga aat ttg cct tct tcg gtt gga aat ctg aaa cat ctg cgt     1776
Val Ile Arg Asn Leu Pro Ser Ser Val Gly Asn Leu Lys His Leu Arg
            580                 585                 590

tac ctg ggc ctg tct aat acg aga att caa agg ttg ccg gag tct gta     1824
Tyr Leu Gly Leu Ser Asn Thr Arg Ile Gln Arg Leu Pro Glu Ser Val
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        595                 600                 605

aca cgt ctt tgc ctc ctt cag aca ttg cta cta gag ggc tgt gaa ctg     1872
Thr Arg Leu Cys Leu Leu Gln Thr Leu Leu Leu Glu Gly Cys Glu Leu
    610                 615                 620

tgc agg tta cca aga agc atg agc agg ctc gtc aaa ctg agg cag ctc     1920
Cys Arg Leu Pro Arg Ser Met Ser Arg Leu Val Lys Leu Arg Gln Leu
625                 630                 635                 640

aaa gca aat cca gat gta att gcc gac ata gcc aaa gtc ggg aga ttg     1968
Lys Ala Asn Pro Asp Val Ile Ala Asp Ile Ala Lys Val Gly Arg Leu
                645                 650                 655

atc gaa ctt caa gag ctg aaa gcc tat aat gtt gac aag aaa aaa gga     2016
Ile Glu Leu Gln Glu Leu Lys Ala Tyr Asn Val Asp Lys Lys Lys Gly
            660                 665                 670

cat ggg att gca gag cta agt gca atg aat cag ctt cac ggt gat ctt     2064
His Gly Ile Ala Glu Leu Ser Ala Met Asn Gln Leu His Gly Asp Leu
        675                 680                 685

tcc att aga aac ctt caa aat gta gag aaa acg cga gag tct cgg aag     2112
Ser Ile Arg Asn Leu Gln Asn Val Glu Lys Thr Arg Glu Ser Arg Lys
    690                 695                 700

gcg agg ttg gac gag aaa cag aag ctt aag ctc ttg gat ctg cga tgg     2160
Ala Arg Leu Asp Glu Lys Gln Lys Leu Lys Leu Leu Asp Leu Arg Trp
705                 710                 715                 720

gct gac ggt agg ggt gcc gga gaa tgt gat cgt gac agg aaa gtt ctt     2208
Ala Asp Gly Arg Gly Ala Gly Glu Cys Asp Arg Asp Arg Lys Val Leu
                725                 730                 735

aaa ggc ctc cga cca cat cca aac ctg aga gaa ttg agt atc aaa tac     2256
Lys Gly Leu Arg Pro His Pro Asn Leu Arg Glu Leu Ser Ile Lys Tyr
            740                 745                 750

tac gga ggc act tca tct ccg agt tgg atg acg gat cag tat ctg ccc     2304
Tyr Gly Gly Thr Ser Ser Pro Ser Trp Met Thr Asp Gln Tyr Leu Pro
        755                 760                 765

aac atg gaa acg att cgc ctg cgt agc tgc gca agg ttg acg gaa ctc     2352
Asn Met Glu Thr Ile Arg Leu Arg Ser Cys Ala Arg Leu Thr Glu Leu
    770                 775                 780

cca tgt ctc ggt cag ctg cat atc ctt aga cat ttg cac atc gat ggg     2400
Pro Cys Leu Gly Gln Leu His Ile Leu Arg His Leu His Ile Asp Gly
785                 790                 795                 800

atg tcc caa gtg aga caa att aat ctg caa ttt tat ggc acc gga gaa     2448
Met Ser Gln Val Arg Gln Ile Asn Leu Gln Phe Tyr Gly Thr Gly Glu
                805                 810                 815

gtt tca ggt ttt cca ttg ctg gag ctc ctg aac ata cgt cgc atg ccc     2496
Val Ser Gly Phe Pro Leu Leu Glu Leu Leu Asn Ile Arg Arg Met Pro
            820                 825                 830

agt ctg gag gaa tgg tcg gaa cca cgg aga aac tgt tgc tac ttc cct     2544
Ser Leu Glu Glu Trp Ser Glu Pro Arg Arg Asn Cys Cys Tyr Phe Pro
        835                 840                 845

cgc ctc cat aaa ctg ctg atc gag gat tgt ccc agg ctc agg aat ctg     2592
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Arg Leu His Lys Leu Leu Ile Glu Asp Cys Pro Arg Leu Arg Asn Leu
    850                 855                 860

ccc tcc ctc cca cca aca ctg gaa gaa cta agg ata tca aga aca gga     2640
Pro Ser Leu Pro Pro Thr Leu Glu Glu Leu Arg Ile Ser Arg Thr Gly
865                 870                 875                 880

cta gtt gat ctt cca gga ttc cat gga aac ggt gat gtg acg acg aat     2688
Leu Val Asp Leu Pro Gly Phe His Gly Asn Gly Asp Val Thr Thr Asn
                885                 890                 895

gtt tcc ctt tct tct ttg cat gtt tcg gag tgt cga gaa ctg aga tcc     2736
Val Ser Leu Ser Ser Leu His Val Ser Glu Cys Arg Glu Leu Arg Ser
            900                 905                 910

cta agc gaa gga ttg ttg cag cac aac ctc gtc gcc ctc aag aca gcg     2784
Leu Ser Glu Gly Leu Leu Gln His Asn Leu Val Ala Leu Lys Thr Ala
        915                 920                 925

gca ttt acc gat tgt gat tct ctt gag ttt ttg ccg gcg gaa gga ttc     2832
Ala Phe Thr Asp Cys Asp Ser Leu Glu Phe Leu Pro Ala Glu Gly Phe
    930                 935                 940

aga aca gcc att tca ctt gaa tca ttg ata atg act aat tgt cca ctg     2880
Arg Thr Ala Ile Ser Leu Glu Ser Leu Ile Met Thr Asn Cys Pro Leu
945                 950                 955                 960

cct tgc agt ttt ctt ttg cct tcc tct ctc gag cat cta aag ttg cag     2928
Pro Cys Ser Phe Leu Leu Pro Ser Ser Leu Glu His Leu Lys Leu Gln
                965                 970                 975

cca tgc ctc tat cca aac aac aat gag gat tca ctg tca aca tgc ttc     2976
Pro Cys Leu Tyr Pro Asn Asn Asn Glu Asp Ser Leu Ser Thr Cys Phe
            980                 985                 990

gag aac ctc aca tct ctt tcc ttc  ttg gac atc aaa gat  tgt cca aat   3024
Glu Asn Leu Thr Ser Leu Ser Phe  Leu Asp Ile Lys Asp  Cys Pro Asn
        995                 1000                1005

ctg tca  tca ttt cca ccg ggt  cct cta tgt cag cta  tca gca ctc      3069
Leu Ser  Ser Phe Pro Pro Gly  Pro Leu Cys Gln Leu  Ser Ala Leu
    1010                1015                1020

caa cat  ttg tcc ctc gtc aat  tgc cag agg cta caa  tct att ggc      3114
Gln His  Leu Ser Leu Val Asn  Cys Gln Arg Leu Gln  Ser Ile Gly
    1025                1030                1035

ttc cag  gca ctc acc tcc ctc  gaa agc ttg aca att  cag aac tgc      3159
Phe Gln  Ala Leu Thr Ser Leu  Glu Ser Leu Thr Ile  Gln Asn Cys
    1040                1045                1050

cct cgc  ctc acc atg tca cac  agt ttg gtt gag gtg  aat aac tct      3204
Pro Arg  Leu Thr Met Ser His  Ser Leu Val Glu Val  Asn Asn Ser
    1055                1060                1065

tcc gat  aca ggg ctc gcg ttt  aat atc act cga tgg  atg cgc aga      3249
Ser Asp  Thr Gly Leu Ala Phe  Asn Ile Thr Arg Trp  Met Arg Arg
    1070                1075                1080

cga aca  ggt gac gac ggc ttg  atg ctc aga cac cga  gca caa aat      3294
Arg Thr  Gly Asp Asp Gly Leu  Met Leu Arg His Arg  Ala Gln Asn
    1085                1090                1095
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gat tca  ttt ttc ggg gga ctt  ctg caa cac ctc acc  ttc ctc cag      3339
Asp Ser  Phe Phe Gly Gly Leu  Leu Gln His Leu Thr  Phe Leu Gln
    1100                1105                1110

ttt cta  aag atc tgc cag tgt  cca caa ctc gta acc  ttc acc ggc      3384
Phe Leu  Lys Ile Cys Gln Cys  Pro Gln Leu Val Thr  Phe Thr Gly
    1115                1120                1125

gaa gag  gaa gag aag tgg aga  aac ctt act tct ctt  caa att ctg      3429
Glu Glu  Glu Glu Lys Trp Arg  Asn Leu Thr Ser Leu  Gln Ile Leu
    1130                1135                1140

cac atc  gtt gat tgt cca aac  ctg gag gta ctg cct  gca aac ttg      3474
His Ile  Val Asp Cys Pro Asn  Leu Glu Val Leu Pro  Ala Asn Leu
    1145                1150                1155

caa agc  ctc tgc tcc ctc agc  acc ttg tac atc gtc  aga tgc cca      3519
Gln Ser  Leu Cys Ser Leu Ser  Thr Leu Tyr Ile Val  Arg Cys Pro
    1160                1165                1170

aga atc  cat gcg ttt cct ccc  gga ggt gtc agc atg  tcc ctg gca      3564
Arg Ile  His Ala Phe Pro Pro  Gly Gly Val Ser Met  Ser Leu Ala
    1175                1180                1185

cat ttg  gtc atc cat gaa tgc  cct cag ctg tgt cag  cga tgt gat      3609
His Leu  Val Ile His Glu Cys  Pro Gln Leu Cys Gln  Arg Cys Asp
    1190                1195                1200

cca ccg  gga ggt gat gat tgg  ccc tta ata gct aat  gta cca aga      3654
Pro Pro  Gly Gly Asp Asp Trp  Pro Leu Ile Ala Asn  Val Pro Arg
    1205                1210                1215

ata tgt  ctt gga agg act cat  cca tgt cgc tgt agc  acc acc tga      3699
Ile Cys  Leu Gly Arg Thr His  Pro Cys Arg Cys Ser  Thr Thr
    1220                1225                1230


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            20                  25                  30
Gln Leu Asn Ala Arg Ala Glu Leu Asn Asn Leu Gln Arg Thr Leu Leu
        35                  40                  45
Arg Thr His Ser Leu Leu Glu Glu Ala Lys Ala Arg Arg Met Thr Asp
    50                  55                  60
Lys Ser Leu Val Leu Trp Leu Met Glu Leu Lys Glu Trp Ala Tyr Asp
65                  70                  75                  80
Ala Asp Asp Ile Leu Asp Glu Tyr Glu Ala Ala Ala Ile Arg Leu Lys
                85                  90                  95
Val Thr Arg Ser Thr Phe Lys Arg Leu Ile Asp His Val Ile Ile Asn
            100                 105                 110
Val Pro Leu Ala His Lys Val Ala Asp Ile Arg Lys Arg Leu Asn Gly
        115                 120                 125
Val Thr Leu Glu Arg Glu Leu Asn Leu Gly Ala Leu Glu Gly Ser Gln
    130                 135                 140
Pro Leu Asp Ser Thr Lys Arg Gly Val Thr Thr Ser Leu Leu Thr Glu
145                 150                 155                 160
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Ser Cys Ile Val Gly Arg Ala Gln Asp Lys Glu Asn Leu Ile Arg Leu
                165                 170                 175
Leu Leu Glu Pro Ser Asp Gly Ala Val Pro Val Val Pro Ile Val Gly
            180                 185                 190
Leu Gly Gly Ala Gly Lys Thr Thr Leu Ser Gln Leu Ile Phe Asn Asp
        195                 200                 205
Lys Arg Val Glu Glu His Phe Pro Leu Arg Met Trp Val Cys Val Ser
    210                 215                 220
Asp Asp Phe Asp Val Lys Arg Ile Thr Arg Glu Ile Thr Glu Tyr Ala
225                 230                 235                 240
Thr Asn Gly Arg Phe Met Asp Leu Thr Asn Leu Asn Met Leu Gln Val
                245                 250                 255
Asn Leu Lys Glu Glu Ile Arg Gly Thr Thr Phe Leu Leu Val Leu Asp
            260                 265                 270
Asp Val Trp Asn Glu Asp Pro Val Lys Trp Glu Ser Leu Leu Ala Pro
        275                 280                 285
Leu Asp Ala Gly Gly Arg Gly Ser Val Val Ile Val Thr Thr Gln Ser
    290                 295                 300
Lys Lys Val Ala Asp Val Thr Gly Thr Met Glu Pro Tyr Val Leu Glu
305                 310                 315                 320
Glu Leu Thr Glu Asp Asp Ser Trp Ser Leu Ile Glu Ser His Ser Phe
                325                 330                 335
Arg Glu Ala Ser Cys Ser Ser Thr Asn Pro Arg Met Glu Glu Ile Gly
            340                 345                 350
Arg Lys Ile Ala Lys Lys Ile Ser Gly Leu Pro Tyr Gly Ala Thr Ala
        355                 360                 365
Met Gly Arg Tyr Leu Arg Ser Lys His Gly Glu Ser Ser Trp Arg Glu
    370                 375                 380
Val Leu Glu Thr Glu Thr Trp Glu Met Pro Pro Ala Ala Ser Asp Val
385                 390                 395                 400
Leu Ser Ala Leu Arg Arg Ser Tyr Asp Asn Leu Pro Pro Gln Leu Lys
                405                 410                 415
Leu Cys Phe Ala Phe Cys Ala Leu Phe Thr Lys Gly Tyr Arg Phe Arg
            420                 425                 430
Lys Asp Thr Leu Ile His Met Trp Ile Ala Gln Asn Leu Ile Gln Ser
        435                 440                 445
Thr Glu Ser Lys Arg Ser Glu Asp Met Ala Glu Glu Cys Phe Asp Asp
    450                 455                 460
Leu Val Cys Arg Phe Phe Phe Arg Tyr Ser Trp Gly Asn Tyr Val Met
465                 470                 475                 480
Asn Asp Ser Val His Asp Leu Ala Arg Trp Val Ser Leu Asp Glu Tyr
                485                 490                 495
Phe Arg Ala Asp Glu Asp Ser Pro Leu His Ile Ser Lys Pro Ile Arg
            500                 505                 510
His Leu Ser Trp Cys Ser Glu Arg Ile Thr Asn Val Leu Glu Asp Asn
        515                 520                 525
Asn Thr Gly Gly Asp Ala Val Asn Pro Leu Ser Ser Leu Arg Thr Leu
    530                 535                 540
Leu Phe Leu Gly Gln Ser Glu Phe Arg Ser Tyr His Leu Leu Asp Arg
545                 550                 555                 560
Met Phe Arg Met Leu Ser Arg Ile Arg Val Leu Asp Phe Ser Asn Cys
                565                 570                 575
Val Ile Arg Asn Leu Pro Ser Ser Val Gly Asn Leu Lys His Leu Arg
            580                 585                 590
Tyr Leu Gly Leu Ser Asn Thr Arg Ile Gln Arg Leu Pro Glu Ser Val
        595                 600                 605
Thr Arg Leu Cys Leu Leu Gln Thr Leu Leu Leu Glu Gly Cys Glu Leu
    610                 615                 620
Cys Arg Leu Pro Arg Ser Met Ser Arg Leu Val Lys Leu Arg Gln Leu
625                 630                 635                 640
Lys Ala Asn Pro Asp Val Ile Ala Asp Ile Ala Lys Val Gly Arg Leu
                645                 650                 655
Ile Glu Leu Gln Glu Leu Lys Ala Tyr Asn Val Asp Lys Lys Lys Gly
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          660                 665                 670
His Gly Ile Ala Glu Leu Ser Ala Met Asn Gln Leu His Gly Asp Leu
          675                 680                 685
Ser Ile Arg Asn Leu Gln Asn Val Glu Lys Thr Arg Glu Ser Arg Lys
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Lys Gly Leu Arg Pro His Pro Asn Leu Arg Glu Leu Ser Ile Lys Tyr
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Tyr Gly Gly Thr Ser Ser Pro Ser Trp Met Thr Asp Gln Tyr Leu Pro
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Asn Met Glu Thr Ile Arg Leu Arg Ser Cys Ala Arg Leu Thr Glu Leu
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Pro Cys Leu Gly Gln Leu His Ile Leu Arg His Leu His Ile Asp Gly
785                 790                 795                 800
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Val Ser Gly Phe Pro Leu Leu Glu Leu Leu Asn Ile Arg Arg Met Pro
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Pro Ser Leu Pro Pro Thr Leu Glu Glu Leu Arg Ile Ser Arg Thr Gly
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Leu Val Asp Leu Pro Gly Phe His Gly Asn Gly Asp Val Thr Thr Asn
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Arg Cys Asp Pro Pro Gly Gly Asp Asp Trp Pro Leu Ile Ala Asn Val
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Phe Cys Ala Xaa Phe Xaa Lys Xaa Tyr Xaa Phe Xaa Lys Xaa Xaa Leu
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225   230   235   240
Leu Xaa Xaa Leu His Xaa Xaa Xaa Met Xaa Xaa Val Xaa Gln Xaa Xaa

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                245                 250                 255
Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Pro Xaa Leu Glu
            260                 265                 270
Xaa Leu Xaa Xaa Xaa Xaa Met Pro Xaa Leu Xaa Glu Xaa
        275                 280                 285
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